



# **Sensitive Relay Profiles, Unplanned Outages & Distribution Reliability**



March 17, 2023

# SDG&E Service Territory Overview

**4,100**  
square  
miles

**3.7M**  
customers;  
1.5M  
electric  
meters

**17,496**  
miles of  
Distribution  
Circuit

**2,003**  
miles of  
Transmission  
Circuit

**64%**  
of service  
territory within  
the High Fire  
Threat District  
(HFTD)

# By the Numbers - Sensitive Relay Profile

## WILDFIRE IGNITIONS



Ignitions downstream of SRP-enabled devices

## SYSTEM RELIABILITY

**<1%**



Total outages associated with SRP since 2017

## TIME-TESTED PROGRAM

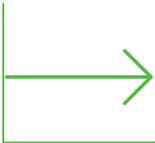
**2011**



Implemented over a decade ago with no operational issues

## OUTAGE CAUSES

**1.7%**



Increase in undetermined outages when SRP was enabled in 2022

## HIGH FIRE THREAT DISTRICT (HFTD)

**100%  
COVERAGE**

in highest risk areas during critical fire weather conditions

## RESTORATION TIMES

**0%**



Increase in restoration times on outages when SRP was enabled in 2022

## RARELY UTILIZED

**< 2%  
OF DAYS**



with SRP-related outages since 2020

## FIRE SAFETY

**15  
YEARS**

Without a large utility-caused wildfire

# Historical Data - Sensitive Relay Profile



*1% of unplanned outages*



*Outages have similar undetermined rate*



*Does not affect restoration time*

Year	SRP Enabled Outages	Total Unplanned Outages	% SRP Related	Unplanned Undetermined	SRP Undetermined	Avg. Restoration Time Unplanned (mins)	Avg. Restoration Time SRP (mins)
2020	34	1,982	1.7%	16.5%	11.8%	150.8	169.7
2021	13	2,038	0.6%	15.0%	38.5%	269.6	413.9
2022	13	1,799	0.7%	13.7%	15.4%	125.7	110.7
<b>Avg.</b>	<b>20</b>	<b>1,940</b>	<b>1.0%</b>	<b>15.1%</b>	<b>21.9%</b>	<b>182</b>	<b>231</b>

## Top Unplanned Outage Causes (by SAIDI impact):

- (1) Tee Failure
- (2) Faulted Cable
- (3) Vehicle Contact
- (4) Severe Weather
- (5) Undetermined

# Historical Data - Public Safety Power Shutoffs



*PSPS have larger impact on customers*



*PSPS restoration time typically > 24 hours*



*SRP restoration time averages < 4 hours*

Year	SRP Enabled Outages	PSPS Circuit Events	SRP Customer Hours	PSPS Customer Hours	Total Unplanned+ PSPS Customer Hours	% Customer Hours (SRP)	% Customer Hours (PSPS)
2020	34	514	348,929	2,631,426	4,948,699	7.0%	53.2%
2021	13	13	68,890	147,767	1,851,182	3.7%	8.0%
2022	13	0	51,374	0	1,765,794	2.9%	N/A
Avg.	20	176	156,398	926,398	2,855,225	4.5%	20.4%

# SRP Application & Response

## Outage Response & Restoration

### Application

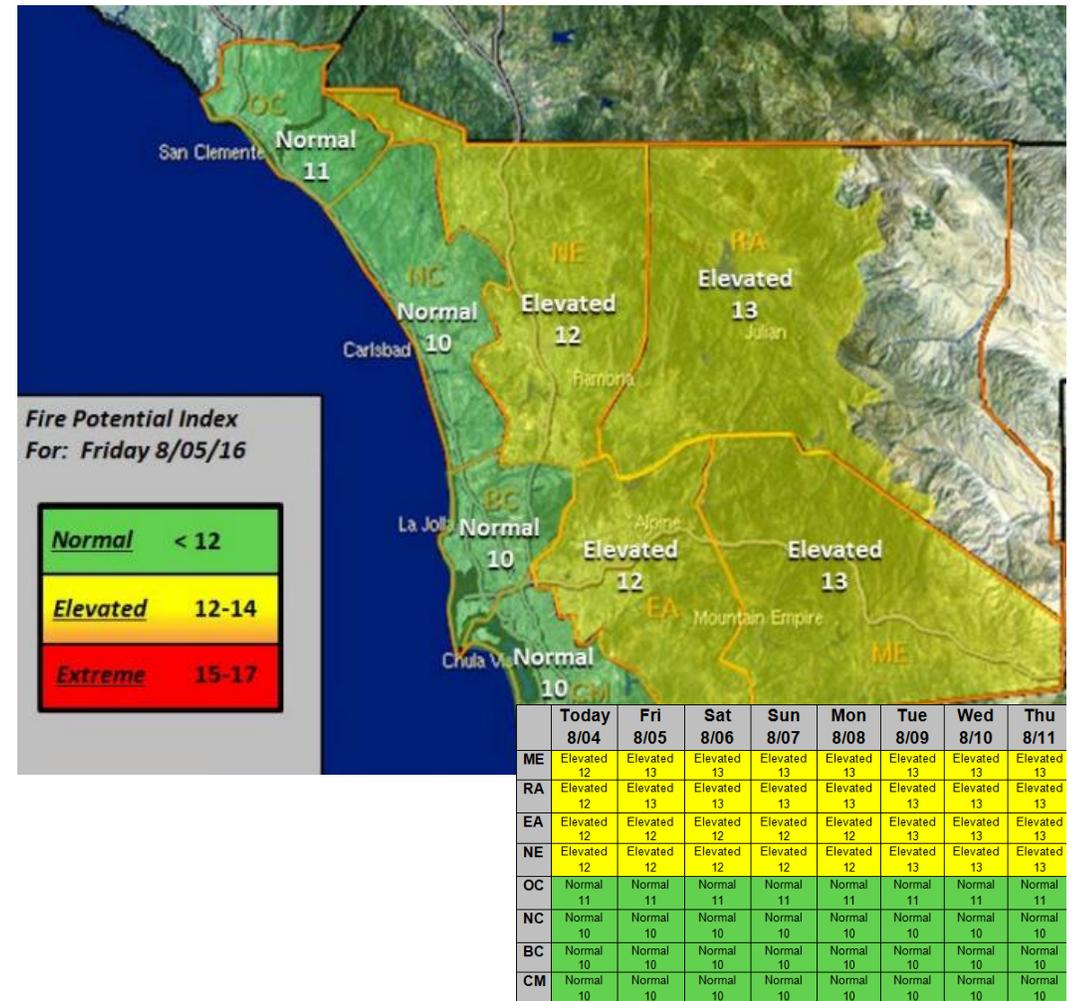
- SRP in place at SDG&E for 10+years
- When extreme fire weather conditions or PSPS risks are present
- Implemented only during event duration – not applied seasonally
- SRP only enabled in regions impacted by extreme weather

### Dedicated Response Crews & Resources

- Fully staffed for Extreme Fire Potential (FPI) & PSPS
- Line SCADA crews ready to respond 24/7 to collect relay records
- Records are sent to System Protection Engineering for review to help determine proper operation & fault location
- Feedback from Engineering provided to the Ops teams for enhanced situational awareness

### Testing, Reclosing, Restoration

- Protocols are no different between SRP & non-SRP conditions under Extreme FPI / PSPS conditions
- Automatic testing is not performed & reclosing is disabled
- Patrol is required & step restore is performed for all outages



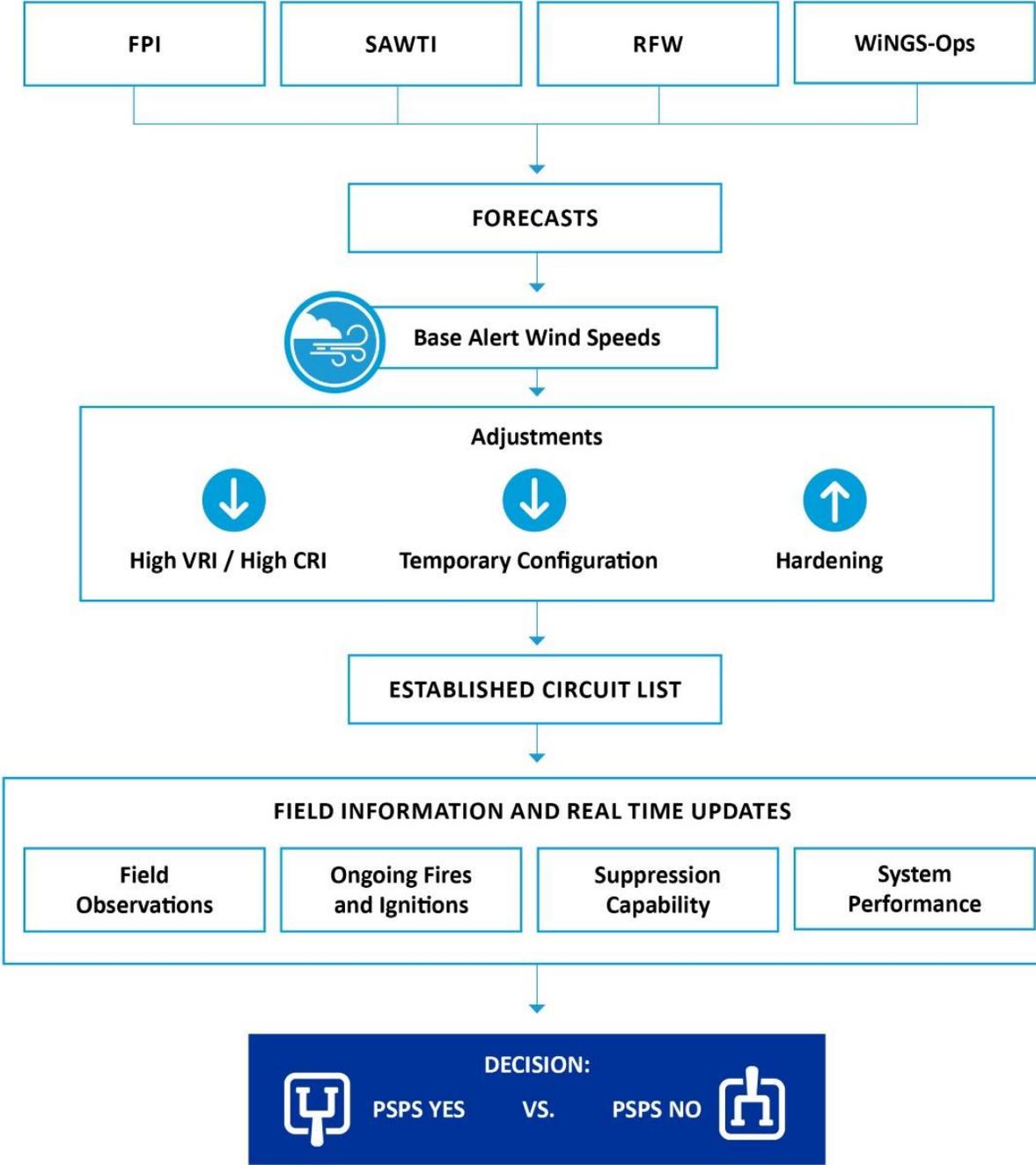
# SRP Activation Criteria

If the Fire Potential Index (FPI) is Extreme in:

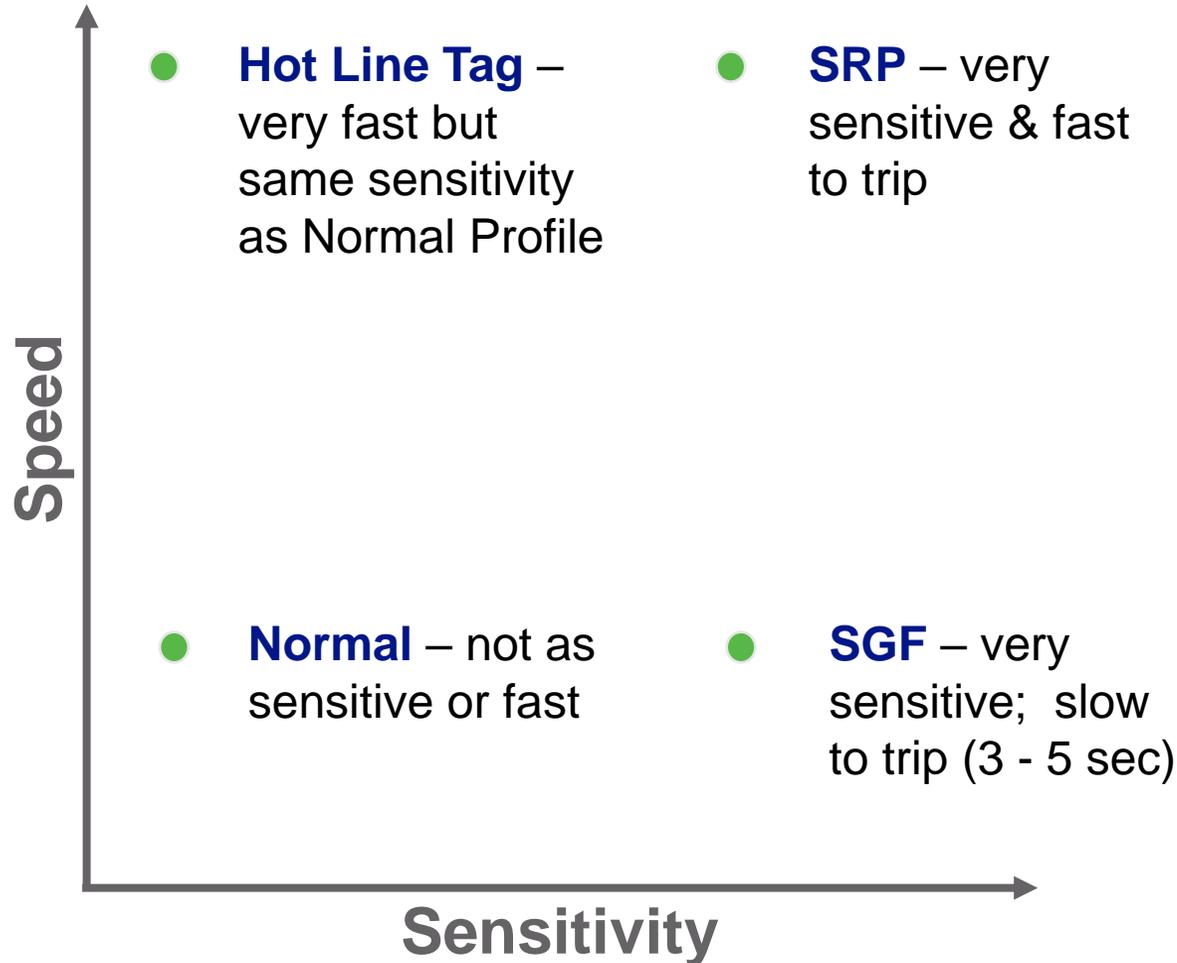
- **Mountain Empire and/or Ramona** - Sensitive Relay Settings should be enabled in **Tier 3 of the HFTD**
- **Eastern and/or Northeast** - Sensitive Relay Settings should be enabled in **all HFTD (Tier 2 and Tier 3)**
- **Orange County** - Sensitive Relay Settings should be enabled in **HFTD in Orange County**
- **Any San Diego County coastal district (North Coast, Beach Cities, Metro)** - Sensitive Relay Settings should be enabled for **all Coastal Circuits with fire risk**



# PSPS Decision-Making Process



# Device Protection Overview



**Normal Profile** – Typical setting used to coordinate isolation of only faulted segments (*Enabled when not in RFW or Extreme FPI*)

**SGF** – Sensitive Ground Fault protection to detect high impedance faults (*Always enabled*)

**SRP** – Sensitive Relay Profile settings on phase and ground set to trip very fast to reduce fault energy (*Enabled during PSPS or Extreme FPI*)

**Hot Line Tag** – Enabled for crew safety when performing hot work. Same setpoints as Normal Profile, but very fast to trip

**Reclosing** – Blocked year-round in HFTD

# Sharing Outage Information with Customers

- Continued OneVoice communication with customers when SRP is enabled
- Outage response is the same for both SRP and non-SRP outages
- Outages mapped with details, including estimated restoration time and outage cause
- SDG&E staffs 24/7 System Protection support to review all SRP outages. Provides real-time situational awareness to operations teams, supporting faster restorations

Outage Map Last Updated Dec 14 at 04:15 PM

Unplanned **Planned**

**Outage Center**

[What to do when your power is out](#)

[Report an outage](#)

[View video on unplanned outages](#)

[View video on planned outages](#)

For more information on outage notifications and how to prepare, check out our [outage center](#).

Planned Active Planned Future

**Outage Detail List**

Communities Affected:  
E Ramona

Circuit Affected: 237  
Customers Out: 5  
Start Time: Dec 14 at 10:31 AM  
Estimated Restoration: Dec 14 at 05:00 PM  
Plan Number: 273798

Outage Cause: Upgrading the electric system in your area requires us to turn off the power. Our crews are working to safely restore your electric service by the estimated restoration time.

# PSPS Backup Power & Customer Support\*

Program/Resource	Description	Eligibility Criteria	Program Cost
<b>Generator Grant Program</b>	Portable backup battery provided to qualifying customers in the HFTD with prior PSPS (active Aug-Dec)	<ul style="list-style-type: none"> <li>AFN and MBL customers in HFTD with prior PSPS</li> </ul>	<ul style="list-style-type: none"> <li>Provided at no cost to qualified customers</li> </ul>
<b>Generator Assistance Program</b>	Portable fuel generator & portable power station (PPS) rebates for HFTD customers with prior PSPS, additional rebate for CARE/FERA customers (active Aug-Dec)	<ul style="list-style-type: none"> <li>Customers in HFTD with prior PSPS</li> <li>Must purchase model on qualified product list</li> </ul>	<ul style="list-style-type: none"> <li>\$300 rebate on fuel generators (+ \$150 if enrolled in CARE/FERA)</li> <li>\$100 rebate on PPS (+\$50 if enrolled in CARE/FERA)</li> </ul>
<b>Standby Power Program</b>	Provides a backup power solution to customers that have a high risk of experiencing a PSPS and no future hardening efforts scheduled	<ul style="list-style-type: none"> <li>Customers on selected circuits in HFTD with prior PSPS</li> <li>Individual circuits without future hardening plans are invited based on number and duration of PSPS</li> <li>Customers must receive invitation to participate</li> </ul>	<ul style="list-style-type: none"> <li>Backup power solution and installation provided to customer at no cost</li> <li>Customers responsible for purchase propane tank and fill, if applicable</li> </ul>
<b>Community Resource Centers</b>	Enhanced support including privacy screens, signage, dedicated parking & on-site ASL interpretation	<ul style="list-style-type: none"> <li>All</li> </ul>	<ul style="list-style-type: none"> <li>No cost to the customer</li> </ul>
<b>Tribal Communities</b>	Southern Indian Health Council (SIHC) & Indian Health Council (IHC) provide resiliency items, generators & other needs to tribal communities	<ul style="list-style-type: none"> <li>Tribal members</li> <li>AFN</li> </ul>	<ul style="list-style-type: none"> <li>No cost to the customer</li> </ul>
<b>Centralized Resource Hub</b>	211 San Diego and 211 Orange County connect customers to resources & direct support from 1,000+ orgs (24/7/365, in 200+ languages)	<ul style="list-style-type: none"> <li>All</li> </ul>	<ul style="list-style-type: none"> <li>No cost to the customer</li> </ul>
<b>Food Support</b>	SD Food Bank & Feeding SD partners provide mobile food pantries at rural, tribal & PSPS sites, with warm food provided as needed	<ul style="list-style-type: none"> <li>All</li> </ul>	<ul style="list-style-type: none"> <li>No cost to the customer</li> </ul>
<b>Transportation</b>	FACT paratransit partnership provides accessible transportation to customers' location of choice	<ul style="list-style-type: none"> <li>AFN</li> </ul>	<ul style="list-style-type: none"> <li>No cost to the customer</li> </ul>
<b>Hotel Stays</b>	Salvation Army partnership provides no-cost hotel stays	<ul style="list-style-type: none"> <li>AFN</li> </ul>	<ul style="list-style-type: none"> <li>No cost to the customer</li> </ul>



**Thank you**



# Appendix

